companied by severe clinical symptoms, especially when phagocytosis is well marked; (*c*) vigorous cultures are not in themselves a reliable sign of pathogenic activity.

The bronchial glands are probably invaded by micro-organisms from the pleural cavity in every case. The organisms are sometimes also found after death in the mesenteric glands.

With the exception of those cases in which there are tuberculous lesions of the pleura or lung, the best results may be expected from the resection of a rib with free drainage. In cases in which a tuberculous origin is suspected, removal of the fluid by paracentesis is to be preferred, and especially when the lungs are the seat of tuberculosis. Free drainage in these cases probably offers no better chance of cure than repeated aspiration, and the complete evacuation of the fluid by free drainage appears to accelerate the pulmonary lesion by removing the pressure upon the lung, while the prolonged use of a drainage greatly increases the danger of contamination from without.

Infantile Scorbutus and Sterilized Milk.—Recent communications to the Paris Société de Pédiatrie by MM. Thiercelin and Guinon, reporting cases of infantile scurvy in infants fed upon sterilized milk, have brought out a paper from NETTER (*Revue Mensuelle des Maladies de l'Enfance*, December, 1902, p. 543), who claims to have called attention to this point in etiology in November, 1898.

Since that time numerous observers have reported similar cases. In the collective investigation of the American Pediatric Society, published in 1898, in which 379 cases of scurvy were tabulated, 84 occurred in infants fed exclusively upon sterilized or pasteurized milk. In the same year von Starck published 67cases, collected in Schleswig-Holstein, of which 18 at least were due to sterilized milk. In the present paper the author tabulates 23 observations from French sources, of which nine followed the use of milk sterilized at home or at the dairy.

Admitting that fresh milk is possessed of antiscorbutic properties, and that under the influence of heat this quality is destroyed, the author reasons that, while we do not know all the elements to which fresh milk owes these properties, we do know at least one which is diminished in sterilized milk, and this is precisely the substance which is par excellence the preventive against scurvy—citric acid, the active principle of lemon juice. Various investigators have shown the presence in fresh milk of an important quantity of citric acid in the form of calcium citrate. Henkel states that cow's milk contains from 0.9 to 1.01 grammes of citric acid to the litre, and Göldner has shown that this acid is combined largely with calcium and, in very small proportions, with potassium and magnesium. Others have found this acid in the milk of other animals. Scheibe estimates the proportion per litre in human milk at 0.5 gramme, and in the milk of the goat at 1.5 grammes. According to Vaudin, this citric acid plays an important rôle in keeping the earthy phosphates in solution. In a word, as Corbette puts it, a litre of milk contains as much citric acid as an ordinary lemon. Corbette has also shown that the amorphous tribasic citrate of fresh milk is much more soluble when cold than when hot, and that under the influence of prolonged boiling it is transformed into the much less soluble crystalline citrate, which is precipitated in large part and is only partially dissolved in cooling. The transformation and consequent loss of citric acid in solution will therefore be the more complete as sterilization is prolonged, as the cooling is less rapid, as the absence of subsequent agitation does not permit the redissolution of a part of the precipitated crystals. It seems certain that the milk of the cow normally holds a proportion of citric acid greater than the needs of the infant, since it is double that of human milk. It is therefore evident that even after sterilization cow's milk may preserve sufficient of its soluble citrates to prevent the development of scurvy, and that many infants may be fed upon sterilized milk, especially in the lesser dilutions, without developing scorbutic symptoms. But it is impossible to be assured that at any moment this balance may not be disturbed, owing to natural diminution in these antiscorbutics in the milk itself, or to greater prolongation of the sterilizing process. An observation of Medin's in 1898 at the children's hospital in Stockholm is very suggestive in this connection. Medin observed within a few months 15 cases of infantile scurvy in infants fed upon milk sterilized in the hospital by means of the Soxhlet apparatus, while in the preceding ten years not a case had been observed among the infants fed upon milk sterilized by the same method.

Attention is also called to the fact that milk is frequently subjected, not once but several times, to repeated cooking or sterilization. Neumann, in Berlin, in 1901 and 1902, collected a considerable number of cases of scurvy among families making use of a milk from an excellent dairy. It was found that, as a further precaution against contamination of the milk, the whole output of the dairy was regularly pasteurized before delivery to its consumers. As a result of Neumann's investigation, this dairy issued a circular to its patrons advising against further sterilization of the milk in the household, or that, at least, the time of ebullition in the sterilizer be reduced to one or two minutes at the most.

A later communication of von Starck (*Verhandlungen der Gesellschaft deutscher Naturforscher*, Hamburg, 1901) showed that infantile scurvy had become much rarer in Schleswig-Holstein since these facts had been recognized. Three years after his first investigation, in which 67 cases had been collected, a second inquiry among 300 physicians of the country obtained only 22 cases, 5 of which had been fed on maternized milk, 4 on sterilized milk (Soxhlet), 1 on sterilized milk, 2 on boiled milk, 2 on milk and barley soup, 4 on barley soup exclusively, and 2 on oatmeal soup.

While insisting upon the significance of citric acid contained normally in milk, and its diminution under the effect of heat, Netter is not convinced that the antiscorbutic properties of fresh milk are contained exclusively in its citrates. There are other antiscorbutic elements which are modified by heat or other agents, and it is extremely probable that they exist in milk.

In the infrequent cases of scurvy in infants nourished at the breast, the author believes that the mother's milk, under peculiar conditions, has lost to some considerable degree its antiscorbutic properties. Ill-health of the mother resulting from wasting disease, or other cause, such as prolonged mercurial treatment, may thus act in rendering her milk very poor in its antiscorbutic elements. In the case reported by Crandall in 1899 the mother had heart disease, with marked anæmia, and had been confined to bed since the baby's birth.